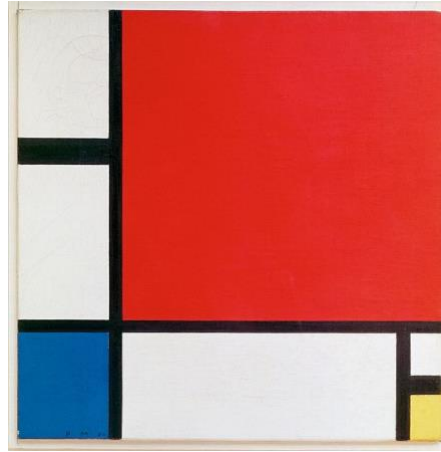


## 11. Rebecca

**Program Name:** Rebecca.java

**Input File:** rebecca.dat

Rebecca is a fan of the Dutch art movement *De Stijl*. She especially likes the works of artist Piet Mondrian.



*Piet Mondrian, Composition with Red, Blue, and Yellow, 1930.*

Many of Mondrian's best known works are made of straight lines and solid colors like the one above. They typically use few colors. Inspired by this art, Rebecca set out to make her own paintings. Here is one of Rebecca's paintings:

1	1	2	2
1	1	2	2
3	3	3	3

Rebecca's canvas is made of  $R$  rows, each with  $C$  cells. Each cell in her painting has a color, represented by a positive integer. A rectangle is defined using two cells: an upper left cell  $(r1, c1)$  and a lower right cell  $(r2, c2)$ . A rectangle is *monochromatic* if every cell  $(r, c)$  where  $r1 \leq r \leq r2$  and  $c1 \leq c \leq c2$  has the same color. For example, using 1-based indexing for the rows and columns,  $(1, 1)$  to  $(2, 2)$  is a monochromatic rectangle (all cells have color 1), but  $(2, 2)$  to  $(2, 3)$  is not (there is a cell of color 1 and a cell of color 2).

Given the layout of Rebecca's painting, find the number of monochromatic rectangles in the painting.

**Input:** The first line of input has an integer  $T$  ( $1 \leq T \leq 20$ ), the number of test cases. Each test case begins with two positive integers  $R$  and  $C$ , the number of rows and columns in Rebecca's painting. The next  $R$  lines each have  $C$  space separated integers, the color of each cell of her painting.

The sum of  $R * C$  over all test cases will not exceed 6,000,000. Each color in the painting is a positive integer between 1 and 1,000,000,000, both bounds inclusive.

**Output:** For each test case, output the number of monochromatic rectangles in the grid, formatted with the case number as in the samples.

**Sample Input:**

```
2
3 4
1 1 2 2
1 1 2 2
3 3 3 3
4 3
8 7 8
5 3 1
2 4 6
6 2 1
```

**Sample Output:**

```
Case #1: 28
Case #2: 12
```

**Sample Explanation:** In the first sample, there are 9 rectangles of color 1, 9 rectangles of color 2, and 10 rectangles of color 3, for a total of 28 monochromatic rectangles. In the second sample, all monochromatic rectangles are 1x1 squares.